Reductions in Offshore Wind Energy

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Opportunities for Cost Reductions in Offshore Wind Energy Logistics

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Abstract

The aim of this research was to identify possible opportunities for offshore wind cost reductions through logistics innovation. The research included a case study within a company involved in offshore wind farm planning, construction and operation.

One of the results from the case study was that the company, at the time, had no company-wide logistics organization that supported horizontally in the organization of logistics in general.

Conclusions from the study suggests that a focused organizational approach for logistics both horizontally and vertically within company organizations in the offshore wind industry could be a way to organize towards cost reductions [1].

Hypothesis

The hypothesis of the research was that the area of logistics within the supply chain could bring cost reductions within offshore wind energy.

Learning objectives

Key learning objective centers around logistics as a significant cost component within end-to-end levelized cost of energy for an offshore wind farm.

Another learning centers around logistics as a key organizational focus area to reduce levelized cost of energy within offshore wind.

Final learning includes how terminology and language differs within the offshore wind industry including the definition of logistics itself [1].

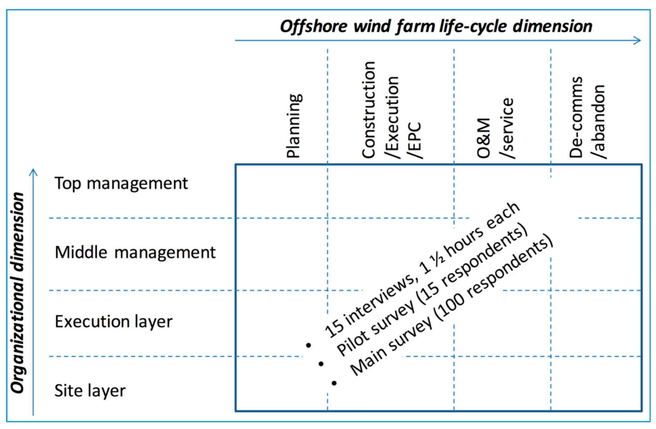
Methods

The research was based on the case study method. The case study was conducted within a single company over a period of 18 months.

The research used a combination of 15 interviews and a survey sent out to a total of 115 survey respondents.

The interviews were carried out with a researcher as lead and with a company representative participating based on a detailed interview guide. All interviews were taped and transcribed which included several reviews for accuracy conducted by a team of 5 researchers.

The survey was created with an initial survey to 15 respondents after which an update to the survey was done and the survey sent to 100 company respondents.



The interviewees and survey respondents were chosen in a manner which would enable best possible coverage of a subset of the 1600 employees of the company organization across 4 organizational layers segmented into the 4 life-cycles of an offshore wind farm.

The 4 life-cycles are

1) Development and Consent
2) Installation and Commissioning
3) Operation and Maintenance
4) De-Commission and Site Abandonment

Results

Key results from the research included the finding that logistics makes up at least 18% of end-to-end levelized cost of energy for offshore wind farms. Compared to other industries and the trend in the US over the past decades in terms of logistics as a share of GDP, the level of logistics costs in offshore wind is very high and cost reductions should be possible.

The research looked at innovation as a path towards cost reductions. A definition of offshore wind logistics was created as part of the research and the main organizational implication from the research is that logistics is generally not organized in a horizontal manner within companies of the offshore wind industry.

Conclusions

A main conclusion of the research was that logistics makes up at least 18% of the total levelized cost of energy for offshore wind farms which is higher than in other industries. The area of Operational Expenditure displayed the greatest overall variation in terms of life-cycle cost areas analyzed.

Perspectives

Cost reduction in offshore wind logistics also may be reached from practical operation and maintenance cost-out initiative implementation [2] and overall, cost reductions need to be considered based on the readiness of the supply chain in general [3].

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